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REPORT

—OF THE—

COMMISSIONERS OF FISHERIES

—OF—

MARYLAND.

G. W. DELAWDER.....G. R. RIDER,
COMMISSIONERS.



ANNAPOLIS:
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1892.

REPORT.

*To His Excellency, ELIHU E. JACKSON,
Governor of Maryland:*

We have the honor to transmit to you the following report of the operations of the Commissioners of Fisheries of Maryland for the fiscal years eighteen hundred and ninety and eighteen hundred and ninety-one, as required by the laws of Maryland, establishing and regulating said Commission.

We think it not improper to state that Fish Culture, as an industrial pursuit, is of recent growth, and has been developed to a much more considerable extent in this country than in the old World, a majority of the States of the Union having established such Commissions.

We have five hatching stations, one at Druid Hill Park, Baltimore; one at Havre de Grace; one on Tuckahoe river, near Coward's Point, in Caroline county; one at Twiford's Mills, near Sharptown, Wicomico county, and one at Salisbury.

The three latter are operated by Thomas Hughlett, Jr., Walter C. Mann and Sylvanus Trader, with a suitable force of assistants at each station. The gentlemen named have had much experience in pisciculture, and have done good work in the service.

The method of hatching fish, as practiced at our stations, is this—during the season for the spawning of the variety to be hatched our spawn-takers ply up and down the rivers, on which, or near which, our stations are located, in small row-boats, and obtain from the fishermen ripe fish, or those ready to spawn, when caught by them, in pursuance of an arrangement by which the fishermen receive compensation for such fish, and give notice to our men of having a ripe fish by calling.

Having received the call, the spawn-taker proceeds as rapidly as possible to the point from whence it came, and having obtained his fish proceeds at once to strip it

of the ripe eggs. In the stripping process the spawn-taker takes the shad, supposing the ripe fish a shad, and catching its head between his legs and holding it strongly by the back with one of his hands, with the shad's back down, he proceeds gently, but firmly, to strip it of its eggs, by passing his hand down the fish, pressing its sides between his thumb and fingers, and thus causing the ripe eggs to issue from it.

The eggs are caught or deposited in a pan, in which there is a small quantity of water, and as soon as all the ripe eggs are stripped from the fish the spawn-taker takes a male fish and strips some milk into the pan and eggs. He then proceeds to stir them gently, adding water to the eggs until they become thoroughly impregnated, the eggs coming up, and growing in size, until they are as large as double B shot. The impregnated eggs are then placed in pails holding about two and one-half gallons of water, and are thus transported to the nearest station, where they are placed in the jars or troughs provided for that purpose, through which there is a flow of pure water, and in a few days the little fishes are hatched out, the jars and troughs being filled with myriads of them.

As the fish out of which the eggs are secured are caught for purposes of consumption, all the eggs hatched by us are saved from destruction, as not one of them would otherwise be saved. After the small fry is hatched out they are either deposited in the waters near stations, or put in large cans and transported to places where it is thought desirable to put them.

In addition to these stations, we also have on the farm of Thomas Hughlett, Sr., near Easton, Talbot county, three ponds for the propagation of German Carp, the young fry of which we take out in the Fall and deposit in the rivers and lakes of our State, and distribute some to citizens, who have ponds of their own, and take an interest in fish culture. As a food fish, this Carp ranks only in the fifth or sixth class.

In the last two years we have had poor success in the culture of this comparatively new variety of fish, the ill success in hatching being caused, we think, by the eggs getting covered by the mud.

In consequence of the expense we have been subjected to in their propagation, and the low rank they hold in the scale of food fishes, it is with us a question

whether the money spent in this branch of pisciculture cannot be used to a better advantage in some other line of the industry.

Of our fishing industries, we can well be proud, for Maryland leads all other States in number of persons employed; in capital invested, it ranks second, and its fishing fleet is larger than that of any other State.

In a recent statistical review of the Coast Fisheries, prepared by J. W. Collins, assistant in charge of the Division of Fisheries in the United States, we see that in 1880 there was reported only eighty pound nets, but in 1888 there were five hundred and ninety-nine, not including those in the Potomac river, where there were one hundred more.

His report puts the total number of men employed in 1888 on fishing vessels, transporting vessels, fishing boats and on shore at 31,951.

In the yield of shad he says nearly two millions more pounds were taken in 1888 than in 1880.

The catch in 1891 was the largest ever known, fully twenty-five per cent. larger than that in any year since 1888, and at least fifty per cent. greater than that of 1888.

Referring to the comparative statements by States of the quantities and values of shad taken in 1880 and 1888, Mr. Collins says: "This comparison has a special interest, since it may fairly be taken as a basis for estimating the effect of artificial propagation of certain species of food-fish which, under natural conditions, have become noticeably depleted. It is proper to state that the supply of shad had been so much reduced by overfishing that in the years immediately succeeding 1880 there was reason to fear that the species would soon become so scarce that it would no longer be available as a reasonably cheap article of food or the object of a profitable fishery."

"In order to comprehend the full significance of this comparison, it is well to remember that the artificial propagation of shad on a large scale by the U. S. Fish Commission was not undertaken until 1881; therefore the effect of it upon the abundance of the species could not be felt or observed until 1885, when the artificially hatched fish attained maturity and returned to the rivers for reproductive purposes. It will thus be seen that the excess of the catch of 1888 over that of 1880 practically shows the result attained by artificial propaga-

tion of shad in the third season after its effects could, by natural limitations, be observed; and the very important facts are shown that the yield of the fishery was almost doubled, and that its value, based on the prices obtained in 1880, was increased nearly \$700,000.

"It may be admitted that the increased catch has to some degree been due to the use of larger quantities of apparatus, but it is evident that without a marked increase in the abundance of shad, as a result of artificial hatching, the profitable employment of additional fishing gear would not be possible. But the fact should not be lost sight of that each year a larger proportion of shad is caught in the bays, estuaries and lower reaches of the river, where pound nets and other gear have been multiplied to such an extent in recent years as to largely prevent anadromous species from ascending to their natural spawning grounds in the headwaters of the streams. For this reason the maintenance of the abundance of shad is more dependent now than ever before upon artificial propagation."

There can be no doubt we think, calmly viewing and weighing the results attained, that the artificial propagation of fish is the only sure way to maintain the supply, and therefore it will commend itself to every fair and unprejudiced mind.

The position of Maryland, in the ranks of the Fishery States, is one to be proud of and is such an exhibit of her wonderful resources in that line, that at our World's Exposition Fair, it will place our State in a position second to none in this useful and substantial industry.

We would call particular attention to the statistics of Maryland Fisheries, as taken from the United State's Report above mentioned and printed herein-after under the head of "Maryland Fisheries," in the Appendix to this Report.

In the Appendix will also be found tables containing statistics of the work of this Commission in taking eggs, hatching and depositing the fry, showing the work done at each station.

To aid and maintain the success of artificial hatching in the future, we would respectfully suggest that the Legislature pass an act closing fishing for shad and herring after May 20th, in each year, also to provide against all fishing with seines and nets, from six P. M. Saturday, to six A. M. Monday, during shad sea-

son, and prohibiting all fishing with seines, nets, traps or other devices, in one half mile of the head of any of the Maryland rivers.

We beg leave to call attention to the fact, that when we took charge of the office there belonged to the Fishery Commissioners, a small steam yacht, called the "Beulah," used principally on the Nanticoke river, for carrying spawn from the fishing grounds to the Hatching Station.

Finding that we could use small row boats to as good a purpose, and at one tenth the expense, we presented the matter to the consideration of your Excellency, and by your advice, we advertised said steam yacht for sale to the highest bidder, and sold her for one hundred and twenty-five dollars, which amount was placed to the credit of the Fish Commission, as appears in the Disbursement Report, made by us, to the Comptroller of the Treasury, for the year 1890.

G. W. DELAWDER,
GRANVILLE R. RIDER,
Commissioners.

December, 1891.

EELS.

*To the Honorable
the General Assembly of Maryland:*

As required by Chapter 497 of the Acts of 1888, we submit our report concerning the destruction of eels:

Amount set apart for this purpose in 1890.....	\$2,500 00
Amount set apart for this purpose in 1891.....	2,500 00
	<hr/>
	5,000 00
Received from sale of eels in 1890.....	\$32 68
Received from sale of eels in 1891.....	145 10
	<hr/>
Total credits	177 78
	<hr/>
Number of eels caught and destroyed in 1890.....	54,989
Number of eels caught and destroyed in 1891.....	57,092
	<hr/>
Total.....	122,081
	<hr/>
Expense in catching, destroying and marketing eels in 1890.....	\$2,151 99
Expense in catching, destroying and marketing eels in 1891.....	2,205 79
	<hr/>
	4,357 78
	<hr/>
Used in hatching fish in 1890.....	\$880 69
Used in hatching fish in 1891	145 10
	<hr/>
Amount remaining to credit of fund.....	525 79
	<hr/>
	294 21

We recommend the old-fashioned eel pot as best plan to catch eels.

G. W. DELAWDER.
G. R. RIDER,

APPENDIX.

TABLE I. RECORD OF SHAD HATCHING OPERATIONS AT SALISBURY STATION FROM APRIL 1 TO MAY 31, 1890.

Date When Taken.	No. Shad Taken.	No. Eggs Obtained.	Date of Hatching.	Where Deposited.	No. Fry Deposited.
1890. April 1.....	1	25,000	1890. April 8.....	Wicomico river.....	20,000
" 9.....	9	225,000	" 19.....	Manokin "	200,000
" 11.....	1	25,000	" 20.....	Wicomico "	20,000
" 12.....	12	300,000	" 21.....	" "	225,000
" 15.....	11	275,000	" 22.....	" "	225,000
" 16.....	9	225,000	" 23.....	" "	200,000
" 17.....	7	175,000	" 25.....	Pocomoke "	150,000
" 18.....	4	100,000	" 29.....	" "	75,000
" 22.....	12	300,000	" 30.....	Nanticoke "	250,000
" 23.....	15	375,000	May 5.....	Manokin "	225,000
" 24.....	9	225,000	" 5.....	" "	200,000
" 25.....	9	225,000	" 9.....	Wicomico "	175,000
" 26.....	9	225,000	" 10.....	" "	175,000
" 29.....	22	550,000	" 13.....	St. Martin "	450,000
May 1.....	12	300,000	" 16.....	Wicomico "	250,000
" 2.....	20	500,000	" 19.....	Pocomoke "	500,000
" 6.....	16	400,000	" 19.....	Manokin "	350,000
" 13.....	18	450,000	" 21.....	Pocomoke "	400,000
" 17.....	10	250,000	" 23.....	Wicomico "	225,000
" 27.....	4	100,000	" 31.....	" "	75,000
					4,390,000
	210	5,250,000			

TABLE I. RECORD OF SHAD HATCHING OPERATIONS AT SALISBURY STATION FROM APRIL 11 TO MAY 28, 1891—Continued.

Date When Taken.	No. Shad Taken.	No. Eggs Obtained.	Date of Hatching.	Where Deposited.	No. Fry Deposited.
1891. April 11.....	1	25,000	1891. April 17.....	Wicomico river.....	20,000
" 14.....	1	25,000	" 18.....	"	20,000
" 15.....	12	325,000	" 20.....	Pocomoke	300,000
" 16.....	12	300,000	" 21.....	Manokin	275,000
" 17.....	24	600,000	" 22.....	Wicomico	400,000
" 18.....	16	400,000	" 25.....	Manokin	500,000
" 21.....	16	400,000	" 27.....	St. Martins	375,000
" 22.....	20	590,000	" 28.....	Pocomoke	450,000
" 23.....	12	300,000	" 30.....	Wicomico	250,000
" 24.....	16	400,000	May 2.....	Nanticoke	350,000
" 28.....	10	250,000	" 4.....	Wicomico	225,000
" 30.....	16	400,000	" 6.....	Pocomoke	350,000
May 5.....	20	500,000	" 13.....	Manokin	450,000
" 12.....	19	475,000	" 20.....	Wicomico	425,000
" 18.....	14	350,000	" 25.....	"	300,000
" 20.....	15	375,000	" 26.....	Pocomoke	350,000
" 22.....	19	475,000	" 28.....	Wicomico	425,000
	244	6,100,000			5,465,000

TABLE II. RECORD OF SHAD HATCHING OPERATIONS AT NANTICOKE STATION FROM MAY 11, TO MAY 21, 1890.

Date When Taken.	No. Shad Taken.	No. Eggs Obtained.	Date of Hatching.	Where Deposited.	No. Fry Deposited.
1890. April 11.....	4	100,000	1890. April 19.....	Nanticoke river	75,000
" 14.....	5	125,000	" 22.....	"	100,000
" 15.....	6	150,000	" 23.....	"	125,000
" 16.....	8	200,000	" 24.....	"	175,000
" 17.....	1	25,000	" 25.....	"	25,000
" 18.....	6	150,000	" 26.....	"	125,000
" 21.....	15	375,000	" 30.....	Laurel, Del.	325,000
" 22.....	16	400,000	May 2.....	Marsh Hope river ...	375,000
" 24.....	13	325,000	" 3.....	Nanticoke river ...	300,000
" 25.....	20	500,000	" 4.....	"	450,000
" 28.....	28	700,000	" 6.....	"	600,000
" 29.....	24	600,000	" 7.....	"	550,000
" 30.....	26	650,000	" 8.....	"	600,000
May 1.....	28	700,000	" 9.....	"	600,000
" 2.....	20	500,000	" 12.....	"	450,000
" 8.....	7	175,000	" 16.....	"	150,000
" 9.....	9	225,000	" 19.....	"	200,000
" 12.....	7	175,000	" 20.....	"	150,000
" 13.....	13	325,000	" 21.....	"	300,000
" 16.....	9	225,000	" 21.....	"	200,000
	265	6,625,000			5,875,000

TABLE II. RECORD OF SHAD HATCHING OPERATIONS AT NANTICOKE STATION FROM APRIL 16 TO MAY 30, 1891—Continued.

Date When Taken.	No. Shad Taken.	No. Eggs Obtained.	Date of Hatching.	Where Deposited.	No. Fry Deposited.
1891. April 16	6	150,000	1891. April 22	Nanticoke river	125,000
" 17	7	175,000	" 24	"	150,000
" 20	12	300,000	" 26	"	250,000
" 21	6	150,000	" 27	Marsh Hope river	125,000
" 22	11	275,000	" 27	"	250,000
" 23	16	400,000	" 27	"	375,000
" 24	18	450,000	" 30	Nanticoke river	900,000
" 25	34	850,000	" 30	"	900,000
" 26	25	625,000	May 4	Laurel, Del.	950,000
" 29	16	400,000	" 6	Brook View	800,000
" 30	22	550,000	"	"	800,000
May 1	18	325,000	"	"	800,000
" 2	4	100,000	"	"	800,000
" 3	12	300,000	"	"	800,000
" 8	9	225,000	"	Riverton	350,000
" 13	12	300,000	"	Nanticoke, Lucas Y'd	200,000
" 15	10	250,000	"	Phillips Landing	275,000
" 19	9	225,000	"	"	425,000
" 21	9	75,000	"	Seaford, Del.	200,000
" 22	3	50,000	"	Laurel, Del.	200,000
" 23	2	6,400,000	"	Marsh Hope river at Wright's Wharf	100,000
					5,475,000

TABLE III. RECORD OF SHAD HATCHING OPERATIONS AT CHORTANK STATION FROM APRIL 1 TO MAY 20, 1890.

Date When Taken.	No. Shad Taken.	No. Eggs Obtained.	Date of Hatching.	Where Deposited.	No. Fry Deposited.
1890. April 1.....	12.....	300,000.....	1890. April 15.....	Tuckahoe river.....	1,000,000.....
" 2.....	10.....	250,000.....	" 15.....	" 22.....	" 600,000.....
" 3.....	11.....	275,000.....	" 23.....	Choptank at Greensboro.....	600,000.....
" 4.....	10.....	250,000.....	" 23.....	Corsica river.....	600,000.....
" 5.....	13.....	325,000.....	" 24.....	Chicacomico river.....	600,000.....
" 6.....	18.....	450,000.....	" 22.....	Black Water river.....	" 600,000.....
" 7.....	23.....	575,000.....	" 23.....	" 30.....	" 1,000,000.....
" 8.....	23.....	625,000.....	" 23.....	" 30.....	" 1,000,000.....
" 9.....	25.....	400,000.....	" 24.....	" 5.....	" 600,000.....
" 10.....	16.....	650,000.....	" 27.....	" 5.....	" 600,000.....
" 11.....	26.....	500,000.....	" 30.....	" 5.....	" 600,000.....
" 12.....	20.....	350,000.....	" 30.....	" 5.....	" 600,000.....
" 13.....	14.....	525,000.....	" 30.....	" 5.....	" 600,000.....
" 14.....	21.....	500,000.....	May 1.....	North East river.....	1,000,000.....
" 15.....	21.....	450,000.....	" 1.....	" 2.....	" 600,000.....
" 16.....	20.....	725,000.....	" 2.....	Chicacomico river.....	600,000.....
" 17.....	18.....	350,000.....	" 2.....	Transquaking river.....	600,000.....
" 18.....	29.....	600,000.....	" 5.....	Bohemia river.....	600,000.....
" 19.....	14.....	1,025,000.....	" 5.....	Sassafras river.....	600,000.....
" 21.....	24.....	725,000.....	" 5.....	" 6.....	" 600,000.....
" 22.....	41.....	625,000.....	" 6.....	" 6.....	" 600,000.....
" 23.....	29.....	1,050,000.....	" 6.....	" 6.....	" 600,000.....
" 24.....	25.....	375,000.....	" 6.....	" 6.....	" 600,000.....
" 25.....	42.....	500,000.....	" 6.....	" 6.....	" 600,000.....
" 26.....	15.....	225,000.....	" 9.....	Miles river.....	600,000.....
" 28.....	20.....	375,000.....	" 15.....	" 6.....	" 600,000.....
" 29.....	9.....	375,000.....	" 15.....	" 6.....	" 600,000.....
" 30.....	.....	.....	.....	.....	.....

May 1.....	19	475,000	May 6.....	Tred Avon river	600,000
" 2.....	24	600,000	" 7.....	.....	.....
" 3.....	9	225,000	" 8.....	Chester river	1,000,000
" 5.....	26	650,000	" 9.....	.....	.....
" 6.....	10	250,000	" 10.....	.....	.....
" 7.....	12	300,000	" 11.....	.....	.....
" 8.....	14	350,000	" 12.....	.....	.....
" 9.....	11	275,000	" 13.....	Tuckahoe river	100,000
" 10.....	12	300,000	" 14.....	.....	.....
" 12.....	13	325,000	" 15.....	.....	.....
" 13.....	7	175,000	" 16.....	.....	.....
" 14.....	5	125,000	" 17.....	.....	.....
	682	17,050,000	" 18.....	.....	.....
			" 19.....	.....	.....
			" 20.....	Tuckahoe river	1,000,000
					12,000,000

TABLE III—Continued. RECORD OF SHAD HATCHING OPERATIONS AT TUCKAHOE STATION FROM APRIL 14th TO MAY 30, 1891.

Date When Taken.	No. Shad Taken.	No. Eggs Obtained.	Date of Hatching.	Where Deposited.	No. Fry Deposited.
1891. April 14.....	15	375,000	1891. April 20.	Tuckahoe River Station.	500,000
" 15.....	24	600,000	" 21.	"	500,000
" 16.....	26	650,000	" 23.	Choptank river.	500,000
" 17.....	19	475,000	" 25	Choptank river.	500,000
" 18.....	17	425,000	" 25	North East river.	600,000
" 20.....	40	1,000,000	" 26	Elk river.	600,000
" 21.....	28	700,000	" 28	Tuckahoe river.	200,000
" 22.....	37	925,000	" 28	Nanticoke river.	500,000
" 23.....	30	750,000	" 29	Wye River, at Wye Mills.	500,000
" 24.....	37	925,000	" 30	Corsica river.	500,000
" 25.....	18	450,000	May 1	Miles river.	500,000
" 27.....	39	975,000	" 2	Tred Avon river.	500,000
" 28.....	38	950,000	" 3	Little Black Water river.	500,000
" 29.....	25	625,000	" 4	Bohemia river.	500,000
" 30.....	28	700,000	" 5	Sassafraes river.	500,000
May 1.....	45	1,125,000	" 6	Tuckahoe river.	500,000
" 2.....	15	327,500	" 7	Choptank river.	500,000
" 4.....	50	1,250,000	" 10	Chester river.	500,000
" 5.....	35	873,000	" 11	Big Black Water river.	500,000
" 6.....	39	975,000	" 12	Chicacomico river.	500,000
" 7.....	42	1,050,000	" 13	Tuckahoe river.	1,500,000
" 8.....	26	630,000	" 14	Chicacomico river.	500,000
" 9.....	20	500,000	" 15	Little Black Water river.	500,000
" 11.....	25	625,000	" 18	Big Black Water river.	500,000
" 12.....	20	500,000	" 18	Transquaking river.	500,000
" 13.....	19	475,000	" 20	Hatching Station.	1,000,000

TABLE IV.

GERMAN CARP DISTRIBUTED IN 1890 AND 1891.

Placed in Pocomoke River.....	600
" Wicomico ".....	500
" Silver Lake.....	75
" H. W. Anderson's Pond.....	150
" G. W. Leonard's ".....	100
" Nanticoke River.....	100
" S. T. Johnson's Pond.....	75
" W. S. Parson's ".....	125
" J. Twifords ".....	50
" Manokin River.....	450
" Chas. H. Wood's Pond.....	50
" Mr. Cooper's ".....	50
" Thos. Humphreys ".....	50
" Stephen Mills ".....	25
" Joseph Spedden ".....	200
" Wm. Twilley of Cambridge.....	50
" Choptank River.....	1000
" Miles ".....	500
" Wye ".....	500
" Tred Avon ".....	500
" Transquaking River.....	500
" Chicacomico ".....	500
Total Distributed.....	6150

TABLE V. RECORD OF YELLOW PERCH HATCHING AT SALISBURY, MARYLAND.

Date When Taken.	No. Yellow Perch.	No. Eggs Obtained.	Date of Hatching.	Where Deposited.	No. Fry Deposited.
1890. March 1.....	2	50,000	1890. March 25.....	Parson's pond.....	300,000
" 2.....	40	1,000,000	" 25.....	Wicomico river.....	700,000
" 3.....	40	1,000,000	" 25.....	Williams's pond.....	200,000
.....	.....	.....	" 25.....	Humphrey's pond.....	500,000
.....	.....	.....	" 27.....	Toadwin pond.....	300,000
.....	.....	.....	" 27.....	Leonard pond.....	500,000
					82

MARYLAND FISHERIES.

All of the commercial fisheries of the State, with the exception of those of the Potomac River, are included in these tables. Reliable figures show 777 persons to have been engaged in the fisheries of this omitted region in 1888. They had boats and apparatus valued at \$70,890, and took products to the value of \$320,243, chiefly oysters and anadromous fish. These items do not enter into the tables.

Maryland now, as in 1880, leads all other States in number of persons employed, showing an increase since that year of more than 5,000. It is next to Massachusetts in capital invested, and the fishing fleet is much larger than that of any other State; but owing to the decadence in the oyster industry, the most important fishery in the State, the value of its products shows a considerable decline. In some fisheries there has been a gratifying increase, and in a few cases a remarkable advance. One very striking instance of this kind is the pound-net fishery. In 1880 there were reported only 83 pound nets, but in 1888 there were 599 in operation, not including the Potomac River, where there were over 100 more. There has been a large advance in the yield of shad, nearly 2,000,000 pounds more being taken in 1888 than in 1880. Nevertheless, the State has lost rank in this branch; in 1880 it headed the list, but now holds only fourth place.

TABLE OF PERSONS EMPLOYED.

How Engaged.	1887.	1888.
On fishing vessels.....	8,353	8,407
On transporting vessels.....	1,118	1,042
On fishing boats.....	13,825	14,105
On transporting boats.....	49	51
On shore.....	8,104	8,256
Total.....	31,449	31,951

TABLE OF APPARATUS AND CAPITAL.

Designation.	1887.		1888.	
	Number.	Value.	Number.	Value.
Vessels fishing *	1,310	\$1,121,620	1,369	\$1,012,785
Outfit.	327	316,664	...	325,495
Vessels transporting †	518,970	309	423,580	
Outfit.	17,065	...	15,230	
Boats fishing	368,042	7,751	386,039	
Boats transporting	26	6,050	27	6,200
Apparatus of capture—vessel fisheries:				
Dredges, tongs, etc	3,142	84,538	3,179	86,387
Seines	21	10,500	24	12,200
Hand lines	51	17	48	15
Apparatus of capture—shore fisheries:				
Dredges, tongs, rakes, etc.	10,095	52,864	10,469	54,963
Pound nets	391	36,045	430	38,755
Stake weirs	179	2,210	169	2,095
Haul seines	425	50,105	455	53,700
Fyke nets	7,333	29,052	7,833	30,887
Gill nets	7,080	42,098	7,460	44,494
Trammel nets	36	2,625	39	2,775
Eel pots	2,995	2,735	3,569	3,216
Hand lines, trawl lines, trot lines, etc	...	1,828	...	1,783
Miscellaneous nets and minor apparatus	3,440	5,228	3,789	5,238
Shore property	...	1,723,826	...	1,753,659
Cash capital	...	1,950,974	...	2,029,403
Total.	...	6,243,056	...	6,288,969

* Tonnage in 1887, 23, 639,10; in 1888, 23, 242,98.

† Tonnage in 1887, 10,569,22, in 1888, 10,213,40.

TABLE OF PRODUCTS BY VESSEL AND SHORE FISHERIES.

Species.	1887.		1888.	
	Pounds.	Value.	Pounds.	Value.
Vessel fisheries:				
Bluefish.....	1,000	\$40	1,200	\$45
Menhaden.....	22,448,400	43,639	24,473,280	52,678
Sea bass.....	185,000	7,000	150,672	6,170
Spanish mackerel.....	475	.95	500	100
Oysters.....	28,475,251	1,487,400	31,350,669	1,666,545
Total.....	51,110,126	1,538,174	55,976,321	1,725,538
Shore fisheries:				
Alewives.....	9,405,170	64,336	8,938,374	67,501
Alewives, salted.....	1,644,000	24,772	2,548,400	42,440
Alewives, smoked.....	12,500	165	25,000	350
Bluefish.....	382,259	17,911	574,743	27,249
Catfish.....	1,289,516	42,303	1,262,113	41,878
Eels.....	483,435	22,981	517,449	24,582
Flaifish and flounders.....	18,000	707	16,030	599
Menhaden.....	1,114,860	3,362	1,188,908	3,597
Menhaden, salted.....	44,600	776	49,600	861
Mullet and suckers.....	261,047	5,880	264,963	5,895
Perch, white.....	966,445	46,589	999,278	47,828
Perch, yellow.....	1,098,273	26,847	1,098,696	27,202
Pike.....	521,143	23,496	577,745	37,286
Sea bass.....	24,375	730	28,000	840
Shad.....	4,040,820	146,951	4,868,435	176,655
Sheepshead.....	9,605	662	9,899	677
Spanish mackerel.....	13,770	1,898	15,177	2,024
Spots and croakers.....	316,291	12,654	318,487	12,915
Squeteague.....	524,727	16,477	537,411	18,382
Squeteague, salted.....	3,400	133	7,800	288
Striped bass.....	1,139,950	96,873	1,123,004	96,856
Sturgeon.....	7,800	296	7,800	312
Sunfish.....	107,971	2,656	100,108	2,500
Miscellaneous fish.....	41,647	1,465	44,427	1,543
Clams (<i>Venus mercenaria</i>).....	334,976	11,405	326,784	11,270
Oysters.....	28,562,268	1,196,035	28,370,937	1,211,245
Crabs, hard.....	2,757,638	36,969	2,674,675	37,48
Crabs, soft.....	1,636,530	133,788	2,208,829	161,331
Shrimp.....	8,050	3,880	8,050	3,880
Frogs.....	1,875	256	1,875	257
Terrapin.....	77,751	21,322	73,848	20,579
Turtle.....	25,555	1,433	24,947	1,401
Total.....	56,871,850	1,976,008	58,811,792	2,087,661

TABLE OF PRODUCTS BY VESSELS AND SHORE FISHERIES.—Continued.

Species.	1887.		1888.	
	Pounds.	Value	Pounds.	Value.
Total vessel and shore fisheries:				
Alewives	9,405,170	64,336	8,938,374	67,501
Alewives, salted.....	1,644,600	24,772	2,548,400	42,440
Alewives, smoked.....	12,500	165	25,000	350
Bluefish.....	383,259	17,951	575,943	27,294
Catfish.....	1,289,516	42,303	1,262,113	41,878
Eels	488,485	22,981	517,449	24,582
Flatfish and flounders.....	18,000	707	16,030	599
Menhaden.....	23,563,260	47,001	25,662,188	56,275
Menhaden, salted.....	44,600	776	49,600	861
Mullet and suckers.....	261,047	5,880	264,963	5,895
Perch, white.....	966,445	46,589	999,278	47,828
Perch, yellow.....	1,093,273	26,847	1,098,696	27,202
Pike.....	521,146	33,496	577,745	37,286
Sea bass	209,375	7,730	178,672	7,010
Shad	4,040,820	146,951	4,868,435	176,655
Sheepshead	9,605	662	9,899	677
Spanish mackerel	14,245	1,993	15,677	2,124
Spots and croakers.....	316,291	12,654	318,487	12,915
Squeteague	524,727	16,477	537,411	18,382
Squeteague, salted.....	3,400	123	7,800	288
Striped bass.....	1,139,950	96,873	1,123,004	96,856
Sturgeon	7,800	296	7,800	312
Sunfish.....	107,971	2,656	100,108	2,500
Miscellaneous fish	41,647	1,465	44,427	1,543
Clams (<i>Venus mercenaria</i>).....	334,976	11,405	326,784	11,270
Oysters.....	57,037,519	2,683,435	59,721,606	2,877,790
Crabs, hard.....	2,757,638	36,969	2,674,675	37,438
Crabs, soft.....	1,636,530	133,788	2,208,829	161,331
Shrimp	8,050	3,880	8,050	3,880
Frogs	1,875	256	1,875	257
Terrapin	77,751	21,322	73,848	20,579
Turtle	25,555	1,433	24,947	1,401
Total.....	107,981,976	3,514,182	114,788,113	3,813,199

TABLE SHOWING BY APPARATUS AND SPECIES THE YIELD OF THE SHORE FISHERIES OF MARYLAND IN 1887,
EXCLUSIVE OF THE SHELLFISH, CRUSTACEAN AND REPTILIAN FISHERIES.

Species.	Haul seines.		Gill nets.		Trammel nets.		Pound nets.		Fyke nets.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Alewives.....	3,791,302	\$26,978	977,240	\$13,596	4,293,172	\$21,196	72,256	\$024	.....	.....
Alewives, salted.....	1,618,600	24,327	6,000	95	.....	.....	.....	.....	.....	.....
Bluefish.....	53,040	2,561	241,115	11,678	18,379	1,102	.....	.....	.....	.....
Catfish.....	315,832	10,701	36,532	893	1,20	\$77	146,888	4,141	491,684	15,459
Eels.....	20,367	674	746	23	.....	.....	52,988	2,045	123,968	5,349
Flatfish and flounders.....	3,750	130	337,020	927	.....	.....	11,800	485	1,400	50
Menhaden.....	622,740	1,828	746	.....	.....	.....	119,100	487	36,000	120
Menhaden, salted.....	42,600	.....	1,265	88,943	2,114	50	.....	.....	2,000	30
Mullet and suckers.....	56,619	1,265	17,273	179,036	2,000	50	69,085	1,409	15,350	315
Perch, white.....	328,542	7,522	81,065	7,894	1,000	50	209,273	9,975	205,570	9,447
Perch, yellow.....	261,825	8,583	138,179	7,722	44,024	3,170	334,451	8,724	378,381	8,599
Pike.....	139,006	21,000	620	.....	.....	.....	92,805	6,306	107,132	7,715
Sea bass.....	992,904	34,913	2,635,413	90,857	.....	.....	1,500	45	.....	.....
Shad.....	.....	.....	13,770	1,898	.....	.....	472,789	19,512	39,684	1,669
Spanish mackerel.....	86,071	3,969	9,585	373	.....	.....	16,575	710	1,000	48
Spoils and croakers.....	54,520	2,070	46,887	1,949	.....	.....	7,775	410	2,800	112
Squeteague, salted.....	.....	.....	1,400	63	.....	.....	.....	.....	.....	.....
Striped bass.....	463,649	42,842	171,122	13,964	29,000	2,920	307,276	24,794	83,211	6,834
Surgeon.....	.....	.....	7,800	296	.....	.....	.....	.....	.....	.....
Sunfish.....	54,211	1,368	3,333	100	3,300	100	11,667	350	35,460	738
Miscellaneous species.....	1,680	68	11,367	530	.....	.....	13,300	372	500	15
Total.....	8,936,408	188,448	4,886,583	156,314	81,044	6,367	6,171,833	102,063	1,597,396	57,424

TABLE SHOWING BY APPARATUS AND SPECIES THE YIELD OF THE SHORES FISHERIES OF MARYLAND IN 1887,
EXCLUSIVE OF THE SHELLFISH, CRUSTACEAN AND REPTILIAN FISHERIES—Continued.

Species.	Bow nets, scoop nets and cast nets.			Pots.			Spears.			Lines.			Total.			
	Pounds.	Value.	Pounds.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	
Alewives	271,200	\$1,642	350	20,000	350	165	12,500	190	252,589	\$13,218	30,624	\$1,609	69,725	\$2,570	9,405,170	\$64,336
Alewives, salted	20,000	350	12,500	165									289,260	10,842	1,644,600	24,772
Alewives, smoked													2,198	68	12,500	165
Bluefish													1,050	42	382,259	17,911
Catfish																
Eels	7,600	190														
Flatfish and flounders																
Menhaden																
Mullet, salted	23,200	580														
Perch, white	28,930	1,140														
Perch, yellow	26,096	595														
Pike																
Sea bass																
Shad																
Sheepshead																
Spanish mackerel																
Spots and croakers																
Squeteague																
Squeteague, salted	13,750	862														
Striped bass																
Sturgeon																
Sunfish																
Miscellaneous species																
Total	403,276	5,524	252,589	13,213	30,624	1,609	1,107,504	39,958						23,407,207	570,920	

TABLE SHOWING BY APPARATUS AND SPECIES THE YIELD OF THE SHORE FISHERIES OF MARYLAND IN 1888,
EXCLUSIVE OF THE SHELLFISH, CRUSTACEAN, AND REPTILIAN FISHERIES.

Species,	Haul seines.		Gill nets.		Trammel nets.		Pound nets.		Fyke nets.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Alewives.....	3,845,782	\$28,561	988,650	\$13,989	.....	.....	3,751	\$32,301	81,956	\$1,016
Alewives, salted.....	2,523,400	41,995	6,000	95	.....	.....	17,129	1,071	.....	.....
Bluefish.....	54,510	2,650	439,004	21,705	1,800	\$81	142,028	4,136	507,168	16,494
Catfish.....	303,941	10,360	40,216	982	.....	.....	67,810	2,677	133,965	5,706
Eels.....	12,601	531	746	23	.....	.....	10,880	409	1,525	55
Flatfish and flounders.....	2,375	85	349,500	1,032	.....	.....	204,460	639	36,000	120
Menhaden.....	598,948	1,743	831	78,575	1,857	2,000	50	80,135	1,638	2,000
Menhaden, salted.....	47,600	1,265	18,543	1,265	199,935	8,872	50	192,884	9,183	17,510
Mullet and suckers.....	353,823	6,974	83,163	83,163	1,421	1,000	50	341,620	9,029	360
Perch, white.....	258,107	9,159	151,325	8,537	56,024	3,930	101,316	6,639	387,395	9,159
Perch, yellow.....	154,493	24,030	720	1,171,342	111,706	.....	2,500	75	114,587	8,721
Pike.....	.....	39,770	3,171,342	15,177	2,924	.....	531,029	23,574	37,199	1,605
Sea bass.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Shad.....	.....	.....	.....	.....	.....	.....	14,120	615	1,400	64
Spanish mackerel.....	76,072	3,528	8,310	315	.....	.....	10,775	453	2,800	112
Spots and croakers.....	48,990	1,933	69,590	2,855	.....	.....	.....	.....	.....	.....
Squeteague.....	.....	.....	1,400	63	.....	.....	295,590	23,499	87,477	7,015
Squeteague, salted.....	444,366	42,537	180,886	15,038	35,800	3,576	.....	.....	.....	.....
Striped bass.....	.....	.....	7,350	312	.....	.....	111	11,667	350	34,460
Surgeon.....	46,114	1,196	4,167	125	3,700	.....	15,800	422	500	718
Sunfish.....	2,760	121	11,367	530	.....	.....	.....	.....	.....	15
Miscellaneous species.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total.....	9,981,290	212,070	5,806,693	191,481	100,324	7,798	5,791,129	107,060	1,652,321	60,907

TABLE SHOWING BY APPARATUS AND SPECIES THE YIELD OF THE SHORE FISHERIES OF MARYLAND IN 1888,
EXCLUSIVE OF THE SHELLFISH, CRUSTACEAN, AND REPTILIAN FISHERIES—Continued.

Species.	Bow, scoop, and east nets.			Pots.			Spears.			Lines.			Total.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Alewives	270,600	\$1,634	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8,938,374	\$67,501
Alewives, salted	20,000	350	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,548,400	42,440
Alewives, smoked	25,000	350	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	25,000	350
Bluefish .....	.....	.....	.....	.....	.....	.....	64,100	\$1,813	574,743	27,249	1,262,113	41,878	1,262,113	41,878
Catfish	7,600	192	278,399	\$14,378	23,068	\$1,209	260,360	9,638	.....	.....	.....	.....	24,582	24,582
Eels .....	.....	.....	.....	.....	.....	.....	1,860	58	517,449	50	16,030	50	517,449	50
Flatfish and flounders .....	.....	.....	.....	.....	.....	.....	1,250	.....	.....	.....	1,188,908	3,597	1,188,908	3,597
Menhaden .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	49,600	861	49,600	861
Mullet and suckers	23,200	580	.....	.....	.....	.....	6,000	155	204,963	585	204,963	585	204,963	585
Perch, white	26,680	1,065	.....	.....	.....	.....	19,577	552	99,978	47,827	47,827	47,827	47,827	47,827
Perch, yellow	24,296	554	.....	.....	.....	.....	4,125	65	1,098,696	27,202	27,202	27,202	27,202	27,202
Pike .....	.....	.....	.....	.....	.....	.....	.....	.....	577,745	37,286	37,286	37,286	37,286	37,286
Sea bass .....	.....	.....	.....	.....	.....	.....	1,500	45	28,000	840	840	840	28,000	840
Shad .....	.....	.....	.....	.....	.....	.....	9,899	677	4,808,435	176,655	176,655	176,655	4,808,435	176,655
Sheepshead .....	.....	.....	.....	.....	.....	.....	.....	.....	9,899	677	9,899	677	9,899	677
Spanish mackerel .....	.....	.....	.....	.....	.....	.....	218,880	7,614	.....	.....	15,177	2,024	15,177	2,024
Spots and croakers .....	.....	.....	.....	.....	.....	.....	405,256	13,029	537,411	318,789	318,789	12,136	318,789	12,136
Squeteague .....	.....	.....	.....	.....	.....	.....	6,400	225	7,800	18,389	18,389	18,389	7,800	18,389
Squeteague, salted	12,458	792	.....	.....	.....	.....	66,435	4,399	1,123,004	96,856	96,856	96,856	1,123,004	96,856
Striped bass .....	.....	.....	.....	.....	.....	.....	14,000	455	7,350	312	312	312	7,350	312
Sturgeon .....	.....	.....	.....	.....	.....	.....	.....	.....	100,108	2,500	2,500	2,500	100,108	2,500
Sunfish .....	.....	.....	.....	.....	.....	.....	.....	.....	44,427	1,543	1,543	1,543	44,427	1,543
Miscellaneous species .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	25,121,692	639,480	25,121,692	639,480
Total	409,826	5,507	278,396	14,378	23,068	\$1,209	1,079,642	39,070	.....	.....	.....	.....	639,480	639,480

SUMMARY BY CUSTOMS DISTRICTS OF THE VESSEL FISHERIES OF MARYLAND.

TABLE SHOWING THE EXTENT OF THE MENHADEN INDUSTRY
OF MARYLAND.

Designation.	1887.	1888.
Number of factories in operation.....	3	3
Value of factories.....	\$17,800	\$27,800
Amount of cash capital.....	\$28,500	\$30,500
Number of shorersmen employed.....	48	55
Number of fishermen employed.....	81	71
Number of steam vessels employed.....	2	3
Net tonnage.....	136.26	198.80
Value	\$14,000	\$20,000
Value of outfit.....	\$4,800	\$5,600
Number of sailing vessels employed.....	3	2
Net tonnage	111.58	58.10
Value	\$5,100	\$3,300
Value of outfit.....	\$3,500	\$2,200
Number of vessels employed as "carryaways".....	4	3
Net tonnage.....	94.35	63.10
Value	\$4,800	\$3,500
Value of outfit.....	\$250	\$200
Number of menhaden handled.....	12,210,000	18,974,050
Value to fishermen.....	\$16,789	\$21,345
Number of gallons of oil made	71,500	44,850
Value as sold.....	\$16,115	\$12,008
Number of tons of scrap produced.....	1,125	1,843
Value as sold.....	\$18,900	\$28,134

SHAD.

Shad were very abundant in the waters about Havre de Grace during the early spring of 1891, and the work of the Commission was as a result the most successful since its organization.

Shad were abundant in the latter part of May, and generally in fine condition for spawning; a good proportion of the females being fully ripe enabled the work to be pushed vigorously. A very large percentage of the eggs taken were successfully hatched, showing that but few failed of impregnation.

The eggs here obtained, or, at least, a portion of the same, were transported daily in buckets especially adapted for the purpose to the Hatching House at Druid Hill Park.

As soon as hatched and in proper condition for removal these were distributed in the waters of the Susquehanna, Back river, Patapsco river and Linthicum Bridge and Annapolis Road.

The entire number aggregated 31,730,000. This, it will be noticed by reference to previous reports, exceeds numerically anything heretofore accomplished.

TROUT.

The past season the labors of the Commission have been directed to the hatching of three varieties of Trout, viz.: Common Brook, German Brown and California Rainbow. These fish are very deservedly popular with the people, and notwithstanding the efforts of the Commission to supply the demand, many parties were disappointed, and will be obliged to await the coming season to obtain their orders.

Respectfully submitted,

G. W. DELAWDER,
G. R. RIDER.

HAVRE DE GRACE STATION, APRIL, 1891.

Shad fry deposited in the Susquehanna river:

April	7.	Deposited	.....	300,000
"	9.	"	.....	450,000
"	12.	"	.....	600,000
"	14.	"	.....	950,000
"	17.	"	.....	1,200,000
"	20.	"	.....	800,000
"	25.	"	.....	730,000
"	29.	"	.....	350,000
May	3.	"	.....	540,000
"	6.	"	.....	460,000
"	10.	"	.....	275,000
"	16.	"	.....	670,000
"	21.	"	.....	700,000
"	26.	"	.....	860,000
"	30.	"	.....	350,000
June	3.	"	.....	250,000
"	4.	"	.....	200,000
"	6.	"	.....	350,000
				10,230,000

DRUID HILL PARK.

1891.				
May	2.	Patapsco river	.....	1,800,000
"	15.	"	.....	1,500,000
"	25.	"	.....	2,200,000
"	28.	"	.....	200,000
June	3.	"	.....	1,800,000
"	6.	"	.....	300,000
				7,800,000

BACK RIVER, BALTIMORE COUNTY.

May	4.	Back river	.....	1,500,000
"	17.	"	.....	2,200,000
"	20.	"	.....	2,100,000
June	1.	"	.....	2,600,000
"	4.	"	.....	1,500,000
				10,200,000
May	19.	Linthicum Bridge	.....	1,100,000
May	21.	Annapolis Road	.....	2,400,000

RECAPITULATION.

Havre de Grace	.....	10,230,000
Patapsco river	.....	7,800,000
Back river	.....	10,200,000
Linthicum Bridge	.....	1,100,000
Annapolis Road	.....	2,400,000
Total	.....	31,730,000

Distribution Trout fry from Druid Hill Hatchery :

R. M. Shanklin, Towson, Baltimore county.....	5,000
William Norris:	
German Brown Trout.....	1,500
Rainbow Trout	500
Brook Trout.....	350
Thomas Pierce, Brook Trout.....	4,000
H. D. Richardson, Brook Trout.....	1,000
S. V. Miller, Brook Trout.....	2,000
William Fell Johnson.....	2,000
J. Y. Keeny.....	2,000
Robert D. Child.....	1,000
Joseph McAvoy.....	2,500
John Ridgely, of H.....	3,000
N. Rufus Gill.....	2,000
Robert Beckley.....	5,000
E. S. Young.....	2,500
J. F. C. Talbott and others.....	10,000
J. J. Gladen	2,000
George Hoff.....	2,000
I. H. Mullin.....	5,000
E. C. Carrington.....	2,000
Howard Ridgely.....	1,500
John A. Robb.....	1,000
John S. Green.....	5,000
Wright Thayer	10,000
Youghhegheny River.....	10,000
Holmes Smith	4,000
Horatis Burton.....	500
R. F. Kimbal.....	10,000
William Norris, Rainbow Trout.....	1,500
Robert Beckley, Brown Trout.....	2,000
H. Warfield	2,000
Joseph Extine	5,000
R. D. Hopkins	2,000
Rev. Rotherard.....	2,000
M. Merryman	3,000
H. E. Johnson.....	3,000
John Wood.....	2,000
Total	119,800